



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,841	08/31/2005	Alexander Gaiger	CRX494-3	9134
20462	7590	09/30/2011		
GlaxoSmithKline			EXAMINER	
GLOBAL PATENTS -US, UW2220			CANELLA, KAREN A	
P. O. BOX 1539				
KING OF PRUSSIA, PA 19406-0939			ART UNIT	PAPER NUMBER
			1643	
			NOTIFICATION DATE	DELIVERY MODE
			09/30/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

US\_cipkop@gsk.com  
arlene.e.cannon@gsk.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,841	<b>Applicant(s)</b> GAIGER ET AL.
	<b>Examiner</b> KAREN CANELLA	<b>Art Unit</b> 1643

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 14 April 2010.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 5) Claim(s) 17,21-28,32,33 and 54 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 6) Claim(s) \_\_\_\_\_ is/are allowed.
- 7) Claim(s) 17,21-28,32,33 and 54 is/are rejected.
- 8) Claim(s) \_\_\_\_\_ is/are objected to.
- 9) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 4/14/10
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date, \_\_\_\_\_.
- 5) Notice of Informal Filing of Application
- 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/14/2010 has been entered.

Claim 17 has been amended. Claim 54 has been added. Claims 17, 21-28, 32, 33 and 54 are pending and under consideration.

### ***Specification***

The specification is objected to for reciting a Cross-Reference to related applications (paragraph 1) which differs from the priority indicated in the Application Data Sheet.

Correction is required.

### ***Priority***

Acknowledgement is made of applicant's claim to an earlier effective filing date as a Continuation in Part application of 10/057,475, filed 1/22/02 as indicated on the Application Data Sheet. The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 10/057,475, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. The '475 application fails to describe the target antigen of BCMA (otherwise known as BCM antigen, Blys receptor, APRIL receptor, TALL-1 receptor, TNFRSF17, receptor for TNFSF13, B Cell Maturation Protein or Antigen, Receptor for

Art Unit: 1643

TNF delta) by name or sequence, or the treatment of CLL by administration of an antibody which binds thereto. Accordingly, the instant claims will not be granted an earlier effective filing date through the '475 application, and will be considered to have the filing date commensurate with that of PCT/US03/02353, January 22, 2003.

#### ***Claim Objections***

Claim 28 is objected to because of the following informalities: the typographical error of "<sup>111</sup>At" rather than "<sup>211</sup>At". Appropriate correction is required.

It is noted that SEQ ID NO: 4 is BCMA, which is also known as BCM protein, TNFRSF17 as well as the receptor for APRIL, Blys, Baff, Tall-1, TNF-delta and TNFSF13.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17, 21-28, 32, 33 and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 is vague and indefinite in the recitation of "polypeptides unrelated to SEQ ID NO: 4". It is unclear what meets and bounds determine a polypeptide related to SEQ ID NO: 4, therefore it is unclear what meets and bounds determine a polypeptide unrelated to SEQ ID NO:4. It is unclear if "related" or "unrelated" is being assessed at the sequence level, or structural level or at the level of a particular biological function, and it is unclear what degree of variance in any of primary sequence, overall structure or specific biological function is necessary for a polypeptide to be considered related to SEQ ID NO:4 therefore it is unclear what degree of variance in any of primary sequence, overall structure or specific biological function is necessary for a polypeptide to be considered unrelated to SEQ ID NO:4.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 21-23, 32, 33 and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Schneider et al (WO 01/24811, reference of the IDS filed 6/11/2007).

Claim 17 is drawn to a method for treating chronic lymphocytic leukemia in a mammalian subject comprising administering to said subject an effective amount of an isolated monoclonal antibody that specifically binds to a polypeptide comprising SEQ ID NO:4, wherein said antibody does not detectably bind to a polypeptide unrelated to SEQ ID NO:4.

Claim 21 embodies the method of claim 17 wherein said antibody is a humanized antibody. Claim 22 embodies the method of claim 17 wherein said antibody is a chimeric antibody. Claim 23 embodies the method of claim 17, wherein said antibody is a Fab fragment. Claim 32 embodies the method of claim 17 wherein the mammalian subject is a human. Claim 33 embodies the method of claim 17 wherein the administration is intravenous.

Schneider et al disclose a method for treating a mammalian subject with a cancerous disorder, wherein said cancers express APRIL receptor or APRIL comprising the administration of anti-APRIL Receptor antibodies (page 4, lines 17-21 and page 16, lines 24-32). Schneider et al disclose examples of such cancers as including CLL (page 16, lines 33-34 and page 18, line 12). Schneider et al disclose the April receptor as SEQ ID NO:8 (page 11, lines 3-5) which is identical to the instant SEQ ID NO:4. Schneider et al disclose that the treatment of mammals includes the treatment of humans (page 11, lines 6-8). Schneider et al disclose antibodies including Fab', F(ab')2, chimeric, or humanized which meets the limitations of claims 21-23. Schneider et al disclose that the anti-APRIL-Receptors antibody does not cross-react with a protein that has less than 80% homology with SEQ ID NO:8. Schneider et al disclose

intravenous administration (page 4, lines 25-26). Schneider et al does not specify that the anti-APRIL receptor antibody is a bi-specific antibody, therefore the limitations of claim 54 are met.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 17, 21-23, 26, 27,33 and 54 rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al (WO 01/24811) in view of Hanna et al (U.S. 2002/0028178).

Claim 26 embodies the method of claim 17 wherein said antibody further comprises a therapeutic moiety. Claim 27 embodies the method of claim 26 wherein the therapeutic moiety is a radionuclide.

Schneider et al teach as stated above. Schneider et al do not specifically teach the conjugation of a therapeutic moiety or a therapeutic moiety which is a radionuclide to the anti-APRIL-Receptor antibody

Hanna et al teach antibodies for treating B cell malignancies, including chronic lymphocytic leukemia, wherein said antibodies are conjugated to therapeutic radionuclides (paragraphs, [0025] and [0033]).

It would have been prima facie obvious at the time that the claimed invention was made to attach a therapeutic radionuclide to the anti-APRIL-Receptor antibody of Schneider et al for the treatment of CLL. One of skill in the art would have been motivated to do so by the teachings of Hanna et al regarding the attachment of therapeutic radionuclides to an antibody administered for the treatment of B cell malignancies including CLL.

Claims 17, 21-23, 26-28,33 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al and of Hanna et al as applied to claims 17, 21-23, 26, 27,33 and 54 above, and further in view of Hansen et al (U.S. 6,962,702).

Claim 28 embodies the method of claim 27 wherein the radionuclide is selected from the group consisting of  $^{90}\text{Y}$ ,  $^{123}\text{I}$ ,  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{186}\text{Re}$ ,  $^{211}\text{At}$  and  $^{212}\text{Bi}$ .

The combination of Schneider et al and Hanna et al render obvious the instant claims to the extent that anti-April-R antibodies are conjugated to a therapeutic radionuclide. The combination does not specifically teach the radionuclides of  $^{90}\text{Y}$ ,  $^{123}\text{I}$ ,  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{186}\text{Re}$ ,  $^{211}\text{At}$  or  $^{212}\text{Bi}$ .

Hansen et al teach the targeting of therapeutic radionuclides by means of conjugation to antibodies, and that particularly useful therapeutic radionuclides include  $^{90}\text{Y}$ ,  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{186}\text{Re}$ ,  $^{211}\text{At}$  and  $^{212}\text{Bi}$  (column 17, lines 12-16).

It would have been prima facie obvious at the time that the claimed invention was made to use the therapeutic radionuclides of include  $^{90}\text{Y}$ ,  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{186}\text{Re}$ ,  $^{211}\text{At}$  and  $^{212}\text{Bi}$  in the method of treatment rendered obvious by the combination of Schneider et al and Hanna et al. One of skill in the art would have been motivated to do so by the teachings of Hansen et al regarding the preferred radionuclides for therapeutic delivery via antibody conjugates.

Claims 17, 21-25, 33 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al (WO 01/24811) in view of Shadidi et al (BBRC, 2001, Vol. 280, pp. 548-552).

Claim 24 embodies the method of claim 17 wherein said antibody is a Fv fragment.  
Claim 25 embodies the method of claim 17 wherein said antibody is a scFv.

Schneider et al teach the invention, wherein the antibody was an antibody fragment such as a Fab' or F(ab')2 fragment. Schneider et al do not specifically teach Fv antibody fragments or scFv antibodies in the context of the invention.

Shadidi et al teach the selection of anti-leukemic scFv antibody selected from a human phage antibody library (abstract). Shadidi et al teach that human antibodies selected from phage libraries may well have a high therapeutic value relative to mouse or humanized antibodies and that human scFv antibodies can be used as delivery vectors for drugs and toxins to tumor cells (pages 550-551, bridging paragraph).

It would have been *prima facie* obvious at the time that the claimed invention was made to prepare scFv antibodies from human single chain phage antibody libraries. One of skill in the art would have been motivated to do so by the teachings of Shadidi et al regarding the potential high therapeutic value of the scFv antibodies as relative to mouse or humanized antibodies.

All other rejections and objections as set forth or maintained in the prior Office action are withdrawn in light of applicant's amendments.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAREN CANELLA whose telephone number is (571)272-0828. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Misook Yu can be reached on (571)272-0839. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/501,841  
Art Unit: 1643

Page 8

/KAREN CANELLA/  
Primary Examiner, Art Unit 1643